

STAT

PROGRAM INDOCTRINATION
TRAINING MANUAL

November 27th, 1961

USAF review(s)
completed.

STAT

INTRODUCTION:

This training session has been established to familiarize you with the program oxygen equipment, both personal and ships systems.

A total of six days will be used for this training course. Two days will be spent in classroom indoctrination: the remaining time will be spent in the altitude chamber simulating various flight conditions.

A detailed agenda is listed in Section 4.

The 'Classroom Indoctrination' will be used to give you a better understanding of the equipment you will be using.

The 'Altitude Chamber Runs' will give you actual experience and establish your confidence in the system as you are exposed to simulated flight conditions.

To help reassure you, the equipment, the suit the chamber and your crew have been through this exercise many times before: SUCCESSFULLY, I might add.

_____ will be the Training Coordinator and _____ serves as your Crew Chief during the chamber runs.

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3. TEST FACILITY
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5. DATA RECORDING
 - 5.1 Medical Data (Physical)
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 - 5.3 Suit Checkout (Back pressure vs. flow)
 - 5.4 Oxygen Consumption - Ship System
Oxygen Consumption - Emergency O₂ System
6. GRAPHS
 - 6.1 Heat Cycle - Graph Number 1

1. PURPOSE:

To provide the user with preliminary training and background information on the environmental system.

2. SYSTEM DESCRIPTION:

The environmental control system consists basically of a full pressure suit for altitude and high temperature protection, in addition to the oxygen systems, both ship and emergency.

3. TEST FACILITIES:

3.1 Equipment:

- 3.1.1 Altitude Chamber with Heat Chamber mocked up to simulate shipboard oxygen system
- 3.1.2 Bio-Medical Checkout Equipment
- 3.1.3 Emergency Oxygen System
- 3.1.4 Assorted flow and pressure measuring instruments

SECTION 4
PROGRAM TRAINING AGENDA

11-28-61

First Day:

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A.M.
9 to 11

Indoctrination:

1. System Familiarization:

- 1.1 Ship System
- 1.2 Suit System
- 1.3 Ground Support Equipment

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2. Test Equipment Familiarization

2.1 Chamber

2.2 Instrumentation

- 2.2.1 Altitude
- 2.2.2 Oxygen Consumption
- 2.2.3 Vent Supply
- 2.2.4 Temperature Recording
- 2.2.5 Medical Instrumentation
 - 2.2.5.1 Rectal Probe
 - 2.2.5.2 EKG Patches
 - 2.2.5.3 Body Temperature Pickups

2.3 Test Procedure

- 2.3.1 Normal
- 2.3.2 Emergency

P.M.
1 to
4:30

Two-Hour Run with Full Pressure Suit:
Suit checkout

- 1. One-half hour at 27,000 feet
- 2. One-half hour at 35,000 feet
- 3. One-half hour at 27,000 feet

Check back pressure vs. ventilation on suit at ground level, 27,000 feet and 35,000 feet.

Subject will use 'Press-to-test' at both altitudes for familiarization and comfort.

Program Training Agenda

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Fourth Day:

8:30 am
to
1:30 pm

High Altitude/High Temperature:

Full ship system
Bottles charged to _____ PSI.

1. One-half hour at 27,000 feet. (Heat/Graph Number 1)
2. One-quarter hour at maximum altitude (Heat as on Graph Number 1) Vent off.
3. One-half hour at 27,000 feet (Heat/Graph Number 1)
4. Rapid ascent to 55,000 feet. Hold for one quarter hour. (Maximum heat all over box wall - 500°F) Vent off.
5. Descent at 10,000 feet per minute to 27,000 feet. Hold for one-quarter hour. (All heat off) Vent on. Cooler on.
6. At 27,000 feet send in Emergency Oxygen System. (All heat OFF)
7. Rapid ascent to 60,000 feet. (All Heat OFF) Ship Oxygen Supply OFF. (Emergency Oxygen ON)
8. When Emergency Oxygen gages show 300 PSI (highest system) start descent to ground level. (All heat OFF) (Ship Oxygen Supply OFF) Emergency Oxygen ON

Program Training Agenda

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Fifth Day:

A.M./P.M.
8 - 4:30

Indoctrination Training:



Detail functions of system.

Briefing on run to be made on Sixth Day.

Sixth Day:

A.M./P.M.
7 to 5

Eight and One-half Hour Run:

1. Four and one-quarter hours at 27,000 feet (Heat per Graph Number 1) Full Ship Oxygen System, except Chamber air temperature will be held to 100°F.

2. Four and one-quarter hours at 27,000 feet (Heat per Graph Number 1) Chamber temperature will be held to 100°F. One-half Ship Oxygen System.

Program Training Agenda

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BASIC PROCEDURES:

1. Subject will pre-breath pure oxygen for ONE HOUR prior to the chamber run.
2. During test, subject will read out ship system gages every ten minutes for the first hour - every fifteen minutes thereafter. Emergency oxygen gages, when this system is used, will be read every five minutes.
3. Standard rate of ascent and descent will be 10,000 feet per minute.
4. No in-flight feeding is planned unless requested by the subject.

TEST CONDITIONS: _____

SUBJECT: _____ AGE: _____ HEIGHT: _____

NUDE WEIGHT: Start _____ CLOTHED WEIGHT: Finish _____
Finish _____ Start _____

WEIGHT LOSS: _____ WEIGHT GAIN: _____

[illegible]

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Time

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Start dressing

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Recorder

Subject

Suit Pressure	mm. Hg.	at	LPM Vent flow	"H ₂ O Diff.
Suit Pressure	mm. Hg.	P.T.T. Number 1		"H ₂ O Diff.
Suit Pressure	mm. Hg.	P.T.T. Number 2		"H ₂ O Diff.

Time _____ On Chamber O₂ _____ PSI No. 1 _____ PSI No. 2 _____

[illegible]

BACK PRESSURE vs FLOW
DATA SHEET

Full Pressure Suit No. S-901

Subject _____

Test Conductor _____

Date _____

GROUND LEVEL BENCH TEST using 'Vol-O-Flow' meter. Suit only without subject, helmet and gloves OFF.

FLOW RATE (L.P.M)	BACK PRESSURE VENT AIR, SUIT (" H ₂ O)
190	
280	
350	

GROUND LEVEL - Subject fully suited: Visor closed.

FLOW RATE (L.P.M)	BACK PRESSURE VENT AIR, SUIT (" H ₂ O)	
	Standing	Sitting
190		
280		
350		

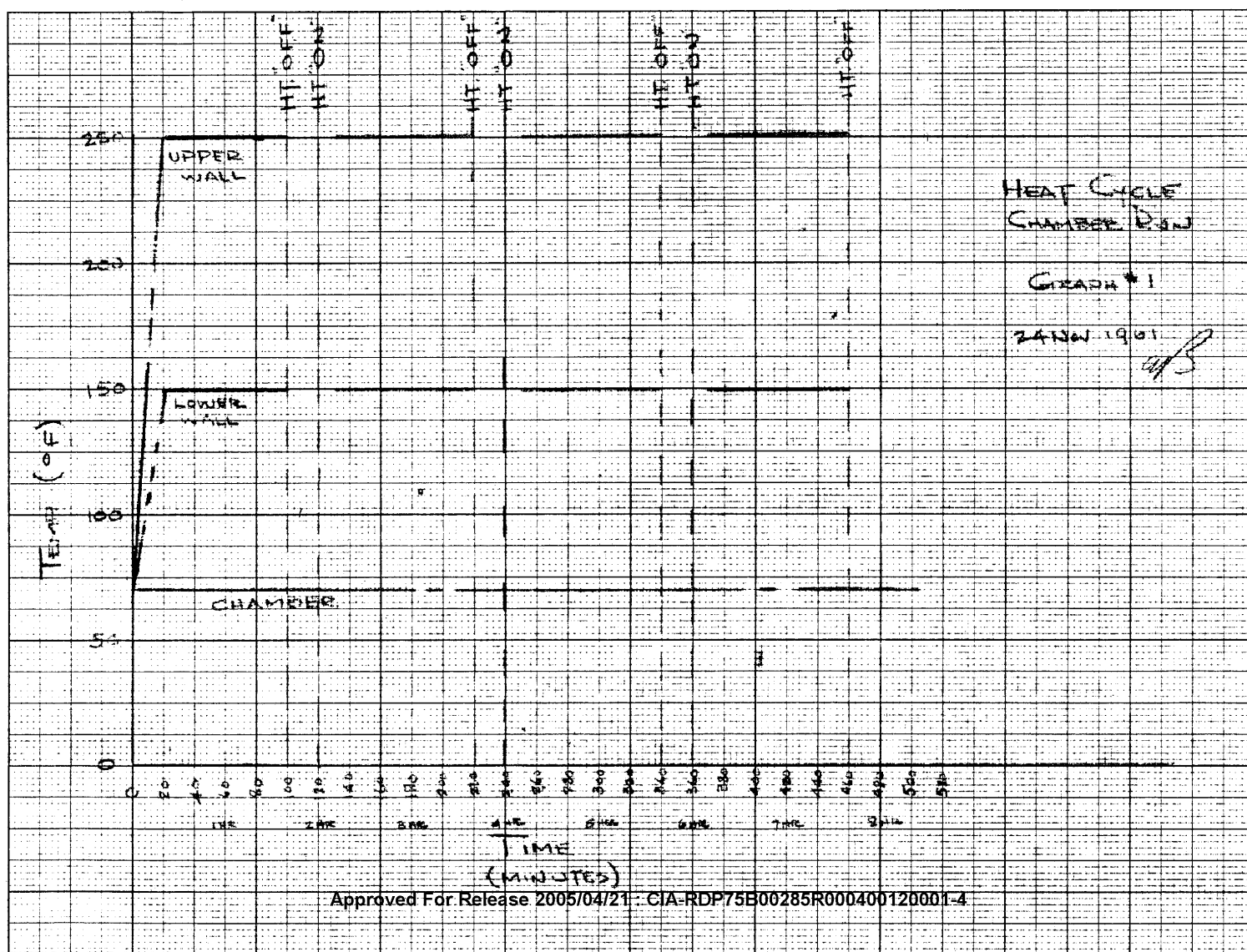
ALTITUDE CHAMBER TESTS - Subject fully suited, visor closed.

FLOW RATE (L.P.M)	BACK PRESSURE, VENT AIR, SUIT (" H ₂ O)			
	Ground Level		27,000 Feet	35,000 Feet
	Sitting Only	Flight Hookup	Flight Hookup	Flight Hookup
190				
280				
350				

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PROGRAM TRAINING AGENDA - *One Subject*

FIRST DAY

INDOCTRINATION

1. System Familiarization

Ship System
Suit System

2. Test Equipment Familiarization by

STAT

Chamber and Chamber Instrumentation

Altitude
Oxygen Consumption
Vent Supply
Temperature Recording

Medical Instrumentation

Rectal Probe
EKG Patches
Body Temperature Pickups

Test Procedure

Normal
Emergency

3. Suit Checkout (Bench Test)

4. Chamber Run

4.1 Familiarization Flight
One and one-half hours at 26,000 ft.

4.2 During chamber runs, frequently subject is requested to use the press-to-test for familiarization and comfort. Check ventilation vs. back pressure on suit at ground level and 26,000 ft.

5. Briefing for nine and one-half hour run

SECOND DAY

1. Nine and One-Half Hour Run - (Heat per Graph Number 2)
 - 1.1 One and one-half hours at 26,000 ft.
 - 1.2 One-half hour at 35,000 ft. Check back pressure of suit ventilation
 - 1.3 Two hours at 26,000 ft.
 - 1.4 Ascend to 70,000 ft. for familiarization with the pressurized suit.
 - 1.5 Two hours at 26,000 feet
 - 1.6 At 26,000 ft. subject will exercise, simulating cockpit-type movements. (30 minutes)
 - 1.7 Remainder of run at 26,000 ft.

THIRD DAY

1. Indoctrination:

G. S. E.
Van Maintenance
Van Transport
Ventilator, Hand

Flight Mask -
Recovery System
Parachute
Survival Kit

Helmet and Oxygen Mask Fit-up

2. Brief for high altitude and high temperature run of fourth day

FOURTH DAY

High Altitude and High Temperature

Three and One-Half Hour Run -

1. Full Ship System

- 1.1 One hour at 26,000 ft. (Heat per Graph Number 2)
- 1.2 One-quarter hour at maximum altitude (Heat Graph Number 2)
- 1.3 One-half hour at 26,000 feet (Heat per Graph Number 2)
- 1.4 Rapid ascent to 55,000 feet. Hold for 5 minutes after wall temperature reaches 400°F. (Maximum heat all over box wall - 400°F.) Vent OFF.
- 1.5 Descent at 10,000 feet per minute to 26,000 feet. (All heat off for rest of run) Vent ON.
- 1.6 At 26,000 feet send in Emergency Oxygen System.
- 1.7 Rapid ascent to 60,000 feet. Ship Oxygen Supply OFF. Emergency Oxygen ON. Vent ON.
- 1.8 When Emergency Oxygen gages show 300 psi (Highest System) start descent to ground level.

2. Brief for eight and one-half hour run.

FIFTH DAY

1. Eight and One-Half Hour Run -

- 1.1 Four and one-quarter hours at 26,000 ft. (Heat per Graph Number 2) - Full Ship System
- 1.2 Four and one-quarter hours at 26,000 feet (Heat per Graph Number 2) One-half Ship Oxygen System, using whichever system has depleted faster.

2. Summary of Indoctrination

8-22-62

First Day:

A.M.
8 to 10

Indoctrination - Outline

1. System Familiarization

- 1.1 Ship System
- 1.2 Suit System

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2. Test Equipment Familiarization

2.1 Chamber

2.2 Instrumentation

2.2.1 Altitude

2.2.2 Oxygen Consumption

2.2.3 Vent Supply

2.2.4 Temperature Recording

2.2.5 Medical Instrumentation

2.2.5.1 Rectal Probe

2.2.5.2 EKG Patches

2.2.5.3 Body Temperature Pickups

2.3 Test Procedure

2.3.1 Normal

2.3.2 Emergency

A.M.
8 to 10

Suit Checkout (Bench Test)

Suit #1

Suit #2

P.M.
11 to 1:30

Subject #1

~~Two-Hour~~ Run with Full Pressure Suit
Suit Checkout

1. One-half hour at 27,000 feet

2. One-half hour at 35,000 feet

3. One-half hour at 27,000 feet

Check back pressure vs. ventilation on suit at ground level, 27,000 feet and 35,000 feet.

Subject will use "Press-to-test" at both altitudes for familiarization and comfort.

Subject #2

Observe - - Lunch

P.M.
2 to 4:30

Subject #2

~~Two-Hour~~ Run as Above

Subject #2

Lunch - Brief for eight-hour run

Program Training Agenda

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Second Day:

A.M./P.M.
8 - 5:30

Subject #1

Eight and One-half Hour Run (Full Oxygen System)

(Suit-up at ~~7:30~~ A.M.) 7:00 Am

Full time at 27,000 feet with heat per Graph #2

Run to 25,000 - intermittent altitudes - Purpose to check out controller

Subject #2

Indoctrination:

G. S. E.
Van Maint
Van Transport
Ventilator, Hand

Flight Mask -
Recovery System
Parachute
Survival Kit

Helmet and Oxygen Mask Fit-up - Brief for eight and one-half hour run

Third Day:

A.M./P.M.
8 - 5:30

Subject #2

(Same as Subject #1 on second day)

Subject #1

(Same as Subject #2 on second day)

Brief for High Altitude with High Temperature Run

Fourth Day:

A.M./P.M.

7 - 12:30

Subject #1

High Altitude/High Temperature:

Full ship system

Bottles charged to _____ PSI.

- Pre breathed 1 hr.*
1. One-half hour at 27,000 feet. (Heat/Graph Number 2)
 2. One-quarter hour at maximum altitude (Heat as on Graph Number 2) Vent off.
 3. One-half hour at 27,000 feet (Heat/Graph Number 2)
 4. Rapid ascent to 55,000 feet. Hold for one quarter hour. (Maximum heat all over box wall - 500°F) Vent off.
 5. Descent at 10,000 feet per minute to 27,000 feet. Hold for one-quarter hour. (All heat off) Vent on. Cooler on.
 6. At 27,000 feet send in Emergency Oxygen System. (All heat OFF)
 7. Rapid ascent to 60,000 feet. (All Heat OFF) Ship Oxygen Supply OFF. (Emergency Oxygen ON)
 8. When Emergency Oxygen gages show 300 PSI (highest system) start descent to ground level. (All heat OFF) (Ship Oxygen Supply OFF) Emergency Oxygen ON

Subject #2

Brief for High Altitude/High Temperature Run

P.M.

1:30 -

7:00

Subject #2

High Altitude/High Temperature Run as Subject #1

Subject #1

Review of High Altitude/High Temperature Run
Brief on eight and one-half hour run

Fifth Day:

A.M./P.M.

8 - 5:30

Subject #1

Eight and One-half Hour Run

Suit-up at 7:30 A.M.

1. Four and one-quarter hours at 27,000 feet
(Heat per Graph Number 2) Full Ship Oxygen System, except Chamber air temperature will be held to 100°F.

2. Four and one-quarter hours at 27,000 feet
(Heat per Graph Number 2) Chamber temperature will be held to 100°F. One-half Ship Oxygen System.

Subject #2

Summary of Indoctrination

Brief for eight and one-half hour run

Sixth Day:

A.M./P.M.

8 - 5:30

Subject #2

Eight and One-half hour run

Suit-up at 7:30 A.M.

Same as Subject #1 (Fifth Day)

Subject #1

Summary of Indoctrination

PROGRAM TRAINING AGENDA

*Two
One Subjects*

WINTER DAY

INDOCTRINATION

1. System Familiarization

Ship System
Suit System

2. Test Equipment Familiarization by

STAT

Chamber and Chamber Instrumentation

Altitude
Oxygen Consumption
Vent Supply
Temperature Recording

Medical Instrumentation

Rectal Probe
EKG Patches
Body Temperature Pickups

Test Procedure

Normal
Emergency

3. Suit Checkout (Bench Test)

Suit #1
Suit #2

4. Chamber Run - Subject #1

4.1 Familiarization Flight
One and one-half hours at 26,000 ft.

4.2 During chamber runs, subject is requested to use the press-to-test at any time for familiarization and comfort. - Check ventilation vs. back pressure on suit at ground level and 26,000 ft.

Subject #2
Observe - Lunch

5. Subject #2
One and one-half hour run as above

Subject #1

6. Briefing for nine and one-half hour run

SECOND DAY

1. Nine and One-Half Hour Run - Subject #1
 - 1.1 One and one-half hours at 26,000 ft. (heat per graph number 2)
 - 1.2 One-half hour at 35,000 ft. Check back pressure of suit ventilation
 - 1.3 Two hours at 26,000 ft.
 - 1.4 Ascend to 70,000 ft. for familiarization with the pressurized suit.
 - 1.5 Two hours at 26,000 feet
 - 1.6 At 26,000 ft. subject will exercise, simulating cockpit-type movements. (30 minutes)
 - 1.7 Remainder of run at 26,000 ft.

2. Subject #2
Indoctrination:
 - G. S. E.
 - Van Maint
 - Van Transport
 - Ventilator, Hand

 - Flight Mask -
 - Recovery System
 - Parachute
 - Survival Kit

 - Helmet and Oxygen Mask Fit-up

3. Subject #2
Brief for nine and one-half hour run.

THIRD DAY

1. Nine and One-Half Hour Run - Subject #2

Same as Subject #1 - Nine and one-half hour run on
Second Day

2. Subject #1

Indoctrination

Same as Subject #2 - Indoctrination on Second Day

3. Subject #1

Brief for high altitude and high temperature run of
Fourth day

FOURTH DAY

High Altitude and High Temperature - Subject #1

1. Three and One-Half Hour Run -

- 1.1 One hour at 26,000 ft. (Heat per Graph Number 2)
- 1.2 One-quarter hour at maximum altitude (Heat per Graph Number 2)
- 1.3 One-half hour at 26,000 feet (Heat per Graph Number 2)
- 1.4 Rapid ascent to 55,000 feet. Hold for 5 minutes after wall temperature reaches 400°F (Maximum heat all over box wall - 400°F) Vent OFF.
- 1.5 Descent at 10,000 feet per minute to 26,000 feet. Hold for one-quarter hour. (All heat off for rest of run). Cooler ON.
- 1.6 At 26,000 feet send in Emergency Oxygen System.
- 1.7 Rapid ascent to 60,000 feet. Ship Oxygen Supply OFF. (Emergency Oxygen ON)
- 1.8 When Emergency Oxygen gages show 300 psi (highest system) start descent to ground level.

2. Subject #2

Brief for High Altitude and High Temperature Run

3. Subject #2

High Altitude/High Temperature Run - Same As Subject#1

4. Subject #1

Review of High Altitude/High Temperature Run
Brief on eight and one-half hour run

FIFTH DAY

1. Eight and One-Half Hour Run - Subject #1

- 1.1 Four and one-quarter hours at 26,000 ft. (Heat per Graph Number 2) - Full Ship System
- 1.2 Four and one-quarter hours at 26,000 feet (Heat per Graph Number 2) One-half Ship Oxygen System, using whichever system has depleted faster.

2. Subject #2

Brief on eight and one-half hour run.

SIXTH DAY

1. Eight and One-Half Hour Run - Subject #2

Same as Subject #1 on Fifth Day

2. Subject #1

Summary of Indoctrination

3. Subject #2

Summary of Indoctrination

